

**Graduate
Certificate**



**Mechanical
Engineering**



Concordia
UNIVERSITY

real
education
for the real world

Graduate Programs

Mechanical Engineering at Concordia is known to offer world-class research programs. At the graduate level, it currently addresses the educational needs of the professional, and of career and research-oriented engineers through the M.Eng., M.A.Sc. and Ph.D. programs. In general, these existing programs are designed for engineers who wish to follow a graduate studies program on a full or part-time basis and are willing to do their studies over a comparatively longer time period.

The Certificate program is intended for engineers with experience, who wish to strengthen their knowledge in a specific area. The Certificate program enables these professionals to acquire their education in a shorter time period than the already existing Graduate programs. The program consists of fifteen (15) credits, selected within a specialization readily recognized by the profession. The potential clientele includes working engineers, as well as post-graduates who would like to broaden their knowledge in a specific area of specialization over a shorter time period.

The Graduate Certificate in Mechanical Engineering

The Mechanical Engineering Department offers a Graduate Certificate in Mechanical Engineering for qualified university graduates who wish to obtain expertise in the following disciplines:

- Aerospace
- Composite Materials
- Controls and Automation
- Theoretical and Computational Fluid Dynamics
- Manufacturing Systems

The Graduate Certificate program can be completed in one to two years. Students in the Certificate program with high standing in their Bachelor program and whose academic records satisfy the requirements for Good Standing in the Master's program in Mechanical Engineering (please refer to the Graduate Calendar), may apply for transfer to the Master's program.



Admission Requirements

Applicants to the programme must hold a Bachelor's degree in engineering with good standing. The School of Graduate Studies committee will determine the acceptability of an applicant for admission to the program and may require the applicant to do specific remedial course work to meet the program requirements.

Requirements for Completion

1. Credits: A fully qualified candidate is required to complete a minimum of fifteen (15) credits in one of the fields of concentration listed below.

2. Courses:

- Minimum of nine (9) credits of core courses, from within one area of concentration.
- Maximum of six (6) credits of electives, chosen from the elective courses listed in the Graduate Calendar, or from core courses of any other area of concentration.

3. Good Standing: Students who have completed at least two (2) courses will be assessed in June of each year. To be permitted to continue, students must have a cumulative grade point average (CGPA) of at least 2.75.

4. Graduation: To be eligible to graduate, students must have obtained a cumulative grade point average (CGPA) of at least 2.75.



Courses

All courses are three (3) credits. The core courses in each of the different areas of concentration are:

Aerospace:

MECH 609	Flight Control Systems
MECH 612	Aerodynamics (*)
MECH 616	Gas Turbine Design (*)
MECH 617	Turbomachinery and Propulsion (*)
MECH 623	Helicopter Flight Dynamics
MECH 624	Operational Performance of Aircraft
ENGR 620	Fluid Mechanics
ENGR 642	Standards, Regulations and Certification
ENGR 644	Materials Engineering for Aerospace
ENGR 646	Avionic Navigation Systems

Composite Materials:

MECH 644	Stress Analysis in Mechanical Design
MECH 650	Advanced Materials
MECH 652	Manufacturing of Composites (*)
MECH 658	Mechanical Behaviour of Polymer Composite Materials (*)
MECH 660	Testing and Evaluation of Polymer Composite Materials and Structures

Controls and Automation:

MECH 602	Design of Industrial Control Systems (*)
MECH 606	Analysis and Design of Hydraulic Control Systems (*)
MECH 608	Fuel Control Systems for Combustion Engines
MECH 609	Flight Control Systems
MECH 662	Microprocessors and Applications (*)
ENGR 618	Digital Control of Dynamic Systems
ENGR 641	Robotic Manipulators I : Mechanics (*)
ENGR 646	Avionic Navigation Systems

Theoretical and Computational Fluid Dynamics:

ENGR 620	Fluid Mechanics
ENGR 625	Finite Difference Method in Computational Fluid Dynamics



ENGR 626	Finite Element Method in Computational Fluid Dynamics
MECH 610	Kinetic Theory of Gases
MECH 611	Gas Dynamics (*)
MECH 612	Aerodynamics (*)

Manufacturing Systems:

MECH 642	Metal Machining and Surface Technology
MECH 643	Introduction to Tribology (Wear, Friction and Lubrication)
MECH 646	Advanced Concepts in Quality Improvement (*)
MECH 651	Mechanical Forming of Metals (*)
ENGR 645	System Reliability
ENGR 671	Engineering Systems and Cost Analysis
ENCS 619	Fuzzy Sets and Fuzzy Logic

(*) Some graduate courses are content-equivalent with specified undergraduate courses. The students who have completed the undergraduate courses cannot register in equivalent graduate courses. Refer to the course description where these courses are marked with (*).

For application material, please contact:

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